第２講　国公立大英語　長文演習②

ポイント

【1】裏の意味のある単語
【2】具体例の発見
【3】抽象の発見

次の英文を読んで，設問に答えよ。

High in the mountains of Central America lives a little-known creature called Alston's singing mouse. This rodent, which spends its life running around the floor of the forest, may not seem as if it has much to tell us about ourselves.

But the mouse sings interesting songs, and researchers have discovered some things in common with our own conversations. (1)This ability may be linked to the start of human language.

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brain would send a message to the control center of the brain. The brain would then send messages to the mouth to produce a call.

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But it turns out monkeys can control their sounds in ways that early researchers did not understand. Scientists can train monkeys to call only when they see a sign on a computer screen, for example. To do this, monkeys use the outer part of the brain called the "cerebral cortex."

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In 2011, Michael A Long, a scientist at NYU Medical School, first heard about Alston's singing mice and understood that when it comes to sound, they are a lot more interesting than other types of mice. Singing mice produce songs of quick sounds that can last as long as 16 seconds, and each mouse produces its own special song.

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One day, Andrew M Matheson, one of Long's students, noticed something strange about two mice in neighboring cages. Instead of singing over each other, they sounded as if they were having a conversation.

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Long discovered that Matheson was correct. The mice never sang at the same time: each mouse would wait for the other to stop, and then start up almost right away.

To Long, these patterns were very similar to human conversation. “We are excellent communicators,” he says. “It’s like a hitting a tennis ball right across the net, back and forth. And science hasn’t caught up with how the brain does this.”

So the researchers began studying the brains of the mice, looking for the parts that led them to be “good” communicators.

In one experiment, the researchers put drugs into the brain that slowed down the part that controls singing, and then played a recording of another mouse. Drugged mice often failed to sing back. And when they did, they were slow to begin, taking seconds to start their own song.

Long thinks this area of the mouse brain is very important to (3) the mice’s special communication.

“We think of it as a conductor,” he says. “It allows the animals to sing by taking turns.”

Hage says the results were both surprising and clear.

They show for the first time that mammals other than monkeys can use this part of the brain to control their sounds. What’s more, Hage says, the findings suggest that both humans and rodents came from an animal that lived some 100 million years ago and already had that ability.

“It’s an ability that, in the end, is (4) very important for developing human speech,” Hage says.

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of mouse.

*mammals : animals such as humans, monkeys, mice, etc.

［These Mice Sing to One Another ― Politely by Carl Zimmer, The New York Times, 28 February 2019 © 2023 New York Times］

Questions

1. What is (1)This ability? Explain **in Japanese**.

2. Translate the following **into Japanese**: (2)No other animal has a brain that can do what is necessary for human language.

3. Which of the following statements is true? Choose the most appropriate answer from the following, and write (a), (b), (c), or (d).

(a) When two singing mice sing to each other, they are slow to answer.

(b) The singing mice push a ball back and forth in order to communicate.

(c) The singing mice are hard to study because they don’t sing in their cages.

(d) The singing mice make their own songs that have special meaning.

4. What does (3)the mice's special communication mean? Answer **in Japanese**.

5. According to the article, what ability is (4)very important for developing human speech? Answer **in Japanese**.

第２講　国公立大英語　長文演習②　　　解答

＜解答＞

1. 人間の会話と共通点がある，オールストンのネズミの歌を歌う能力。
2. 人の言語に必要なことを行える脳を持つ動物は他にいない。
3. (d)
4. 同時には歌わずに，一方が歌い終わるのを待って，すぐに歌いだすネズミのコミュニケーション。
5. 自分が出す音をコントロールする能力。

＜問題文の和訳＞

1. (1)この能力とは何か。**日本語で**説明しなさい。
2. 以下を**日本語に訳しなさい**。
3. 次の説明のうちどれが正しいか。以下の選択肢から最も適切なものを選び，(a) ～ (d) のいずれかを書きなさい。
4. (3)ネズミの特別なコミュニケーションとは何を意味するか。**日本語で**答えなさい。
5. この記事によると，どんな能力が (4)人間の発声を発達させるのにとても重要か。**日本語で**答えなさい。

＜全訳＞

中央アメリカの山々の高いところに，オールストンの歌うネズミと呼ばれるあまり知られていない生き物が生息している。このげっ歯類は，林床を走り回って生活するが，私たち自身について多くを教えてくれるようには思えないかもしれない。

しかし，そのネズミは興味深い歌を歌い，研究者は私たちの会話といくつかの共通点を見つけている。この能力は人の言語の始まりと関連しているかもしれないのだ。

科学者は，哺乳類における人の言語の始まりを解明しようと 1 世紀以上取り組んでいる。

「ごく最近までずっと，人間の発声と動物の出す音は 2 つの全く異なるものだというこうした思い込みが存在した」と，ドイツ，テュービンゲン大学の科学者であるステファン・R・ハーゲは言う。

文法ルールの理解から，口に何をすべきかを伝えることまで，人の言語に必要なことを行える脳を持つ動物は他にいない。

初期の研究によると，哺乳類は，コミュニケーションのために，脳のずっと単純な

部位を使用していると示されていた。

もし猿が別の猿に出くわすと，今までの考え方では，脳の恐怖を司る中枢が，脳のコントロール中枢にメッセージを送るというものだった。それから，脳は鳴き声を作るように口にメッセージを送る。

しかし，猿は初期の研究者がわからなかった方法で自分たちの音をコントロールできることが判明している。科学者は猿を訓練して，例えば，コンピューターの画面上にある記号を見たときにだけ鳴くようにできる。これを行うのに，猿は「大脳皮質」と呼ばれる脳の外側の部分を使う。

脳のこの部位は，言語にとって重要だ。このように人間と猿が似ていることは，言語の構成要素が，猿においてずっと前に発達し始めたことを意味する。

科学者がネズミの調査をしたとき，ネズミは人や猿とは全く異なるため，この種のコントロールを発見できなかった。家ネズミは，科学者が最も好むものだが，単純な雑音を出す。

2011 年に，ニューヨーク大学医学部の科学者であるマイケル・A・ロングは初めてオールストンの歌うネズミのことを聞いて，音に関して言えば，他の種類のネズミよりずっと興味深いことがわかった。歌うネズミは短い音で 16 秒も続くことのある歌を作り，それぞれのネズミが独自の特別な歌を作る。

「これは『これが自分だ』と言うバーコードだ」とロングは言う。

オールストンの歌うネズミは，一人でいるときに歌を歌うことがあるが，特に他のネズミが周りにいるときに歌を歌う。ネズミは他のネズミと縄張りに関して戦う方法として，またパートナーを探そうとするとき，歌う。

テキサス大学オースティン校の科学者であるスティーヴン・M・フェルプスと研究していたとき，ロングはネズミの脳を研究するために，ネズミの家をつくった。

ある日，ロングの生徒の一人であるアンドリュー・M・マシソンは，隣り合うカゴに入った 2 匹のネズミに関して，おかしなことに気付いた。お互いに向かって歌うのではなく，そのネズミは会話をしているかのように聞こえたのだ。

ロングはマシソンが正しいとわかった。そのネズミは決して同時に歌うことはなかった。それぞれのネズミが，相手がやめるのを待ってから，間もなく歌い始めた。

ロングにとっては，これらのパターンは，人間の会話ととても似ていた。「私たちはコミュニケーションが上手だ」と彼は言う。「それはちょうどネット越しに，テニスボールをあちらからこちらへと打つようなものだ。そして，脳がどのようにこれをやっているかを，科学は把握できていない。」

そこで，研究者はネズミの脳を研究して，ネズミが，コミュニケーションが「上手

になる」原因となる部位を探し始めた。

ある実験で研究者は，歌うのをコントロールする部位の機能を低下させる薬を脳に注入し，それから別のネズミの録音した音声を再生した。薬を打たれたネズミは，多くの場合，歌い返すことが出来なかった。そして歌い返したときは，歌いだしが遅れ，自分の歌を始めるのに数秒を要した。

ネズミの脳のこの領域が，そのネズミの特別なコミュニケーションにとても重要だとロングは考える。

「私たちはそれを指揮者とみなしている」と彼は言う。「そのおかげで，その動物は交互に歌うことが出来るのだ。」

ハーゲは，その結果は意外であるが，明白でもあると言う。

その結果は，猿以外の哺乳類が，自分の出す音をコントロールする脳のこの部位を使用できることを初めて示している。さらに，ハーゲが言うには，その発見によって，人間もげっ歯類も，およそ１億年前に生息して，すでにその能力を持っていた動物から進化したのだとわかる。

「それは，結局のところ人間の発声を発達させるのにとても重要な能力だ。」とハーゲは言う。

その経験によって，ロングは一種類のネズミしか使わないのは危険だと学んだ。

第２講　重要語彙リスト　　＊一つ一つ何度も繰り返して，覚えてください

1	creature	生き物
2	rodent	げっ歯類（リスやネズミなどの動物の総称）
3	spend O doing	O を～して過ごす
4	as if	まるで～かのように
5	conversation	会話
6	be linked to	～につながる
7	work out	解明する
8	grammar	文法
9	what to do	何を～すべきか
10	suggest	示す
11	it turns out (that) ～.	～とわかる
12	train O to do	O を訓練して～させる
13	likeness	類似
14	examine	検査する
15	when it comes to	～ということになると
16	last	続く
17	as long as	～もの長い間
18	second	秒
19	especially	特に
20	be around	周りに存在している
21	fight over	～をめぐって戦う
22	set up	設置する
23	neighboring	隣の
24	cage	かご
25	correct	正しい
26	right away	すぐに
27	be similar to	～に似ている
28	excellent	非常にすぐれた
29	back and forth	前後に，行ったり来たり
30	catch up with	～に追いつく
31	lead O to do	O に～させる
32	put A into B	A を B に入れる
33	conductor	指揮者
34	take turns	交替でやる
35	what’s more	さらに
36	in the end	最終的に，結局は

第2講　音読用白文　①　②　③　④　⑤　⑥　⑦　⑧　⑨　⑩

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